

CLAIMS

What is claimed is:

1. A method of rotational molding an article comprises the steps of:
loading an internal cavity of a mold with moldable material;
heating the loaded mold;
rotating the loaded mold tumbling and heating the moldable material sufficient to form a shell along surfaces of the interior cavity of the mold;
piercing the shell forming an opening in the moldable material;
venting the interior cavity after a predetermined condition occurs, the predetermined condition, including a predetermined time, or a predetermined pressure, or a predetermined temperature or a combination of said predetermined conditions;
cooling the mold; and
opening the mold and removing the molded article.
2. The method of rotational molding an article of claim 1 wherein the step of piercing the shell includes the step of actuating one or more piercing tips causing a movement through the shell after the predetermined condition occurs.
3. The method of rotational molding an article of claim 2 wherein the step of venting includes the step of positioning a vent tube through the opening in the shell formed by the piercing tip.
4. The method of rotational molding of claim 3 wherein the step of piercing and the step of venting are achieved by the step of actuating one or more venting assemblies attached to the mold, the one or more venting assemblies having a movable piston, the movable piston having a body, a stem with vent passages, and a piercing tip at an end of the stem wherein upon actuating the one or more the vent assemblies moves the piston piercing the shell and permitting internal pressure to escape through the vent passages of the stem.
5. A rotational mold comprises:
a mold having an internal cavity for molding an article;
a means for rotating the mold;
an actuating venting assembly attached to the mold, the actuating venting assembly having a vent housing attached to the mold partially inserted through, or aligned with, an opening in the mold, a movable piston having a piston body, a stem with vent passages and a piercing tip, the stem having a first end and a second end, the

first end being adjacent or integrally connected or attached to the piston body, the piercing tip being located at the second end of the stem, wherein the actuating venting assembly provides a means for piercing the molded article and venting internal pressure within the internal cavity of the mold; and

a means for actuating the actuating venting assembly.

6. An actuating venting assembly for rotational molds comprises:

a housing having for attachment through an opening in a rotational mold, the housing having an internal cylinder;

a movable piston, the movable piston having a body and a stem, the body being mounted in the internal cylinder, the stem having vent passages for allowing internal pressure of the mold to be vented upon actuation; the stem extending from the body of the piston to a distal end.

7. The actuating venting assembly of claim 6 wherein the stem is a hollow tube having one or more venting passages adjacent to the distal end and one or more venting passages in proximity to the piston body in communication through a central opening or bore end in the hollow tube.

8. The actuating venting assembly of claim 6 further comprises:

a piercing tip, the piercing tip being located at the distal end of the stem.

9. The actuating venting assembly of claim 6 wherein the piercing tip is removably attached to the stem.

10. The actuating venting assembly of claim 6 wherein the stem is removable attached to the body of the piston.

11. The actuating venting assembly of claim 6 further comprises:

a piston retraction means; the piston retraction means for moving the piston away from the internal cavity of the mold.

12. The actuating venting assembly of claim 11 wherein the piston retraction means is a spring.

13. The actuating venting assembly of claim 8 wherein the piercing tip is made of a heat resistant polyetheretherketone (PEEK) or polytetrafluoroethylene (PTFE).

14. The actuating venting assembly of claim 6 wherein the stem is an integral extension of the body of the piston.

15. The actuating venting assembly of claim 6 wherein the body of the piston and the stem are separate but adjacent.

16. The actuating venting assembly of claim 6 wherein the stem is a rod having one or more longitudinally extending grooves forming vent passages.